



ISO/TC 197
Hydrogen technologies

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Secretariat: SCC (Canada)

ISO FDIS 16111 (Ed 2) Collated Comments

Document type: Other committee document

Date of document: 2018-10-03

Expected action: INFO

Background: Here are the collated comments from the FDIS 16111 Ballot which closed in June 2018.
The ballot results are presented in N 1025.

Committee URL: <https://isotc.iso.org/livelink/livelink/open/tc197>

Template for comments and secretariat observations

Date:2018-06-21	Document:	Project:
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MB/ NC ¹	Line number	Clause/ Subclause	Paragraph/ Figure/Table	Type of comment ²	Comments	Proposed change	Observations of the secretariat
NZ 001			Annex A	Ed	Page 28 paragraph 3 Replace "The second type, environmental hydrogen embrittlement, results from hydrogen being absorbed by solid metals coming from the service environment."	"The second type, environmental hydrogen embrittlement, results from gaseous hydrogen from the service environment or that generated from a corrosion reaction." Reference: <i>D. M. Symons, A comparison of internal hydrogen embrittlement and hydrogen environment embrittlement of X-750, Engineering Fracture Mechanics Volume 68, Issue 6, April 2001, Pages 751-771</i>	
US 02 002		05.02.1		te	The response to comment US002 from the DIS ballot indicated there was a provision to exclude explosive hydride materials. If this is statement in 5.2.1: "Type I explosive materials ... shall not be used," the statement might not have the desired effect. See https://www.unece.org/fileadmin/DAM/trans/danger/publi/unrec/rev17/English/Rev17_Volume1.pdf . Paragraph 2.1.1.1 explicitly states "a substance which is not itself an explosive but which can form an explosive atmosphere of gas, vapour or dust is not included in Class 1." For example, aluminium powder is a UN class 4.3, but treated as an explosive dust per NFPA 484. The same is true of magnesium powder. Many of the metal hydrides when released as dusts will likely form explosive atmospheres. The working group should understand that the second paragraph of 5.2.1 is not sufficient to exclude combustible, pyrophoric or explosive metals.	Expand the second paragraph to address these combustible, pyrophoric or explosive metals.	
US 03 003		05.03.2.b		Te/ed	US20 comment from DIS ballot requested inserting a plot. Plot was provided and agreed. However, the plot was not inserted as agreed.	Insert the plot as agreed.	
US 04 004		05.06		ed	US23 comment from DIS ballot not addressed adequately: 5.6 states: "Procedures and verification testing shall be put in place to ensure the consistent loading of the hydrogen absorbing alloy/metal hydride in the MH assembly. US comment to clarify manufacturer to include matter in instructions, as manufacturer cannot ensure this. Comment was not resolved.	<i>Add a new paragraph to the end of 5.6:</i> No changes to the assembly process including (but not limited to) different internal structure, amount of material, different alloy formulation, or even method of shaking/vibrating to fill and distribute the solid material shall be made without verification in 6.2.6.	
US 08		06.02.4.3		ed	AR30 comment from DIS ballot not addressed: "It is	It should be easy enough to include a statement	

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2 **Type of comment:** **ge** = general **te** = technical **ed** = editorial

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005					proposed to add the minimum thickness of the material as proposed by GB38, and/or to include a phrase that explains that the steel apex must maintain its structural integrity during and after the test, thus making it clear that it must be robust enough." Response was simply that there was no change from the original version. Insufficient response – if we are changing nothing from the original version, we need only reaffirm that version? Address comment.	that the apex needs to be constructed with a material to be sufficiently robust to withstand the impact from the MH assembly during the test (i.e., to circumvent the reason of the test by using an apex that itself is deformed instead of the MH assembly being damaged).	
US 05 006		06.02.4.5		ed	US32 comment from DIS not addressed adequately: "The new DIS differentiates some requirements for "Type 1 MH Assemblies" and "Type 2 MH Assemblies"; yet these are not well-defined." Convenor response is "Type 1 and Type 2 are now well understood by tank manufacturers or notified bodies. And make reference to various design ISO Standard." The problem is that whereas Type 1 and Type 2 tanks ARE understood, Type 1 and Type 2 MH Assemblies are not. Simply include definition that clarifies a Type 1 MH Assembly is a MH Assembly made using a Type 1 Tank...	<i>Modify the 1st and 2nd pp as follows:</i> The shells of MH Assemblies ... <i>Also modify the 2nd pp as follows:</i> ... Type 1 and Type 2 shells ...	
US 06 007		06.02.4.6		ed	US32 comment from DIS not addressed adequately: "The new DIS differentiates some requirements for "Type 1 MH Assemblies" and "Type 2 MH Assemblies"; yet these are not well-defined." Convenor response is "Type 1 and Type 2 are now well understood by tank manufacturers or notified bodies. And make reference to various design ISO Standard." The problem is that whereas Type 1 and Type 2 tanks ARE understood, Type 1 and Type 2 MH Assemblies are not. Simply include definition that clarifies a Type 1 MH Assembly is a MH Assembly made using a Type 1 Tank...	<i>In 1st and 4th pp:</i> Re-word the sections to eliminate use of "Type 1 and Type 2 MH Assemblies" and "Type 3 and Type 4 MH Assemblies". For example, replace with "MH Assemblies using Type 1 and Type 2 shells" and "MH Assemblies using Type 3 and Type 4 shells", respectively.	
US 07 008		06.02.5.2.1		Ed/te	CA34 comment from DIS ballot noted possible misinterpretation of value for "K" due to lack of clarity. Response was to explain it on comment sheet but make no change in document. A note or	<i>Delete "/150" within the final parenthesis.</i> <i>Add note or example to 6.2.5.2.1:</i> An assembly with an internal volume of less than 60 litres would need to meet the 6 cm ³ /h criteria,	

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					example should be added to document to solve the problem noted.	and all above 60 litres would need to meet “one tenth” the volume cm ³ /h criteria.	
JP 009		08.01		ed	Particular attention should be provided by the manufacturer about the flammability of hydride materials and must provide safety recommendation in case of metal hydride fire. The term hydride materials is not defined. must →shall	Particular attention should be provided by the manufacturer about the flammability of metal hydride and shall provide safety recommendation in case of metal hydride fire.	
US 01 010		Scope and 4.01.1		ed	GB03 comment from DIS ballot not addressed: Agreed comment was to remove the parenthetical unit conversion to bar; however, two remain in the FDIS at the end of the second paragraph: 25 MPa (250 bar) and 4.1.1	Remove (250 bar) from both clauses.	

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